October 26, 1990
NARRATIVE FOR LEADORE QUADRANGLE
DILLON RESOURCE AREA MANAGEMENT PLAN/EIS

INTRODUCTION

The Leadore Quadrangle (LQ) is located along the western side of the Dillon Resource Area (DRA). Leadore is a small town in the Lemhi Valley of Idaho about 8 to 10 miles southwest of the Montana-Idaho state line. This portion of the state line is also the DRA boundary as well as the Continental Divide, which occurs in the Beaverhead Mountains of the Bitterroot Range.

Beaverhead County Route 324 is an improved road originating at Clark Canyon Dam in the Lima Quadrangle. It trends generally westward just north of the LQ; then following Horse Prairie Creek drainage, it turns southward to Bannock Pass, where it connects to Idaho Route 29, which connects to Route 28, which is the main route in the Lemhi Valley. At the north edge of the LQ, a partly improved, partly unimproved road crosses Lemhi Pass and connects to Tendoy. The nearest Montana town is Grant (population 25), which is less than 1 mile north and about 3 miles west of the northeast corner of the LQ.

Drainage in the western part of the DRA is provided by north-flowing Horse Prairie Creek, in the eastern part by north-flowing Medicine Lodge Creek, and in the southern part by several eastðflowing creeks including Cabin Creek and Coyote Creek.

The Beaverhead Mountains of the Bitterroot Range border the entire western edge of the DRA in this quadrangle.

Large areas are covered by Quaternary alluvium, gravel, and glacier deposits, and Tertiary volcanics and sediments of the Miocene Medicine Lodge Formation. The latter contains lignite beds that have been mined locally and probably account for gas shows, which were tested in the "Type Log" well, Luff 1-27 Hansen, NE SW , sec. 27, T. 10 S., R. 12 W., and in the Beaverhead 1 Hansen, sec. 2, same township.

The Cretaceous, Jurassic, and Triassic are not represented in surface outcrops nor expected in the subsurface on the DRA portion of the LQ, although Triassic rocks are recognized in Idaho about 2 miles west of the DRA boundary and, northwest of Baldy Mountain, T. 14 S., R. 12 W. The Beaverhead 1 Hansen, sec. 2, T. 10 S., R. 12 W., drilled in 1955, reported spudding in the lower Cretaceous Vaughn (Aspen) member of the Blackleaf Formation, drilling a normal sequence and bottoming in the Kootenai at 4,300 feet (Kootenai top picked at 3,990). From the more recent (1980) information available in the "Type Log," it is believed that the Beaverhead was miss-correlated and their entire drilled interval is Miocene Medicine Lodge Formation. A very tentative log correlation seems to indicate that an interval at about 3,700 feet in the Beaverhead well is about 300 feet structurally higher than a possibly correlative interval in the Luff well at about 3,850 feet. The Permian and Pennsylvanian are seen on the surface in the vicinity of Baldy Mountain. The Pennsylvanian Quadrant Formation is exposed near Medicine Lodge Peak, T. 12 S., R. 12 W. Neither system was found in the subsurface in the Luff well, but they would probably be present south of the trace of the Cabin Thrust and further east in the McKenzie Thrust system.

The Mississippian is well represented at the surface and in the Luff well. Because of the thrust faulting, the nearest surface outcrops are not representative of what was encountered in the subsurface. In the Luff well, the overthrust plate consisted of Miocene Medicine Lodge sediments overlying Tertiary volcanics. These volcanics rested on Archean Pre-Cambrian Dillon gneiss, which was encountered at 6,400 feet. The gneiss is at the surface about 2 miles to the southwest. A fault zone was drilled at 6,680 to 7,090 feet which consisted of breccia, Tertiary volcanics and Archean gneiss. The Mississippian was immediately beneath the fault zone and continued to 10,400 feet (3,310 feet). The Sappington member of the Devonian Three Forks occurred at 10,400 to 10,493 feet. A normal fault at 8,435 has cut out the Mission Canyon equivalent rocks (Osage) so the well bore passed from Meramecian (Charles) into Kinderhookian (Lodgepole). A small reverse fault has increased the thickness of the Sappington member (Bakken or Exshaw) before crossing a larger thrust fault, which caused the well base to reðenter Lodgepole rocks at 10,500 feet.

Three wells have been drilled in this portion of the DRA, all in T. 10 S., R. 12 W. In addition to the two wells already mentioned, a shallow (1,080 feet) test was drilled in sec. 1 in 1919 by Horse Prairie. It was obviously in Miocene from surface to total depth.

In 1983, Amoco drilled the 19-1 Milford-Federal test in sec. 19, T. 15 N., R. 27 E., Lemhi County, Idaho, Boise Meridian. It is on the Leadore quadrangle about 10-12 miles west of the DRA boundary. This well apparently spudded in Quaternary and was in Tertiary at total depth of 9,875 feet. This test is not directly significant to the classification of the DRA lands on the

LQ but does indicate things about the Salmon and Wisdom quadrangles to the north. The large areas of Quaternary-Tertiary outcrop may be concealing normal faults, or graben blocks, within which significant thickness of Tertiary sediments have been deposited. This faulting appears to be late Paleocene to lower Eocene in age.

OCCURRENCE POTENTIAL

There is no oil or gas production on this quadrangle nor in nearby areas. Therefore, no "HIGH" occurrence potential is indicated on the LQ.

In the northeast corner of the LQ, slightly less than one township in T. 10 S. Rs. 11, 12, and 13 W., is rated as "MODERATE." The presence of source rocks of the Sappington member of the Three Forks Formation is confirmed in this area, and the lower 50 feet of the Lodgepole appears to offer some reservoir potential. In addition, the lignites in the Miocene may be gas prone since the deep Luff test and the Beaverhead well were both tested in these sediments, probably on the basis of gas shows in the mud.

A large part of this quadrangle is rated "VERY LOW" because it is on the Cabin Thrust sheet, which is in the Cordilleran Thrust Belt. The hanging wall rocks are of questionable potential, and the subthrust targets are probably very deep. The areas that have Pre-Cambrian Archean exposures are also rated "VERY LOW."

About one-half of the area is classified as "LOW." Part of this classification is in areas of Pennsylvanian through Mississippian outcrops on the Cabin Thrust sheet and in the McKenzie Thrust system. Also included are areas covered by Quaternary and Tertiary sediments that are totally unexplored.

DEVELOPMENT POTENTIAL

There are no "HIGH" development potential areas on the LQ. The potential illustrated by the three wells in T. 10 S., R. 12 W., is not strong enough to attract more than a very limited industry attention. One more well is expected in this 11 to 12-square mile area in the next 15 years. Whether it will be a 5,000 to 7,000-foot Tertiary test, or an 11,000-15,000-foot Paleozoic test, is very difficult to say. A "MODERATE" potential is shown because a discovery could trigger several additional wells.

The area shown as "LOW" development potential could possibly attract some exploratory investigation.

The "VERY LOW" classification is because of Pre-Cambrian on outcrop, plus probable drilling depths of over 20,000 feet to subthrust targets.

REFERENCES CITED

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